observatories. Exner's researches on atmospheric electricity at the Sonnblick Observatory are also important.

Yet, with all these observational achievements, it must be confessed that the present status of meteorology is very disappointing. Within the century the world has seen physics, chemistry, biology, and other now recognized sciences emerge from their previous uncertain and indefinite condition, but meteorology is comparatively at a standstill. While much is known from thousands upon thousands of observations, many of the fundamental problems are not yet solved. Fifteen years ago von Helmholz turned his attention to the hydrodynamics of the atmosphere; but, so far as meteorology is concerned, this great man left his work unfinished. Recently excellent theoretical researches have been undertaken by Brillouin and Pockels on the formation of clouds and rain; by von Bezold, Herz, Margules, and Neuchoff on the thermodynamics of the atmosphere; by Kitao, Mohn, Sprung, Bjerknes, and Bigelow on the hydrodynamics of the atmosphere. Wild, Eckholm, Pernter, and Marchi have been prominent workers in the other field of the physics of the atmosphere. It appears, however, that not very much has been added to dynamic or theoretical meteorology since the publication of Ferrel's and Oberbeck's works. Meteorological generalizations at present are too indefinite, ascertained ideas too scanty and disjointed in their connection, to form fundamental principles. Any student of mathematical physic who peeps into this adjoining field must feel that he is like a bat in the dark, flying at the gleams of light from a closely curtained window. If science carries with it the idea of precision, meteorology must certainly be in the early stage of science.

And why is it that the advancement of modern meteorology is so slow? Is it because of the lack of complete meteorological data, notably in the upper regions of the atmosphere, or of the complexity of atmospheric phenomena? Or, will natural difficulties never yield to mathematical analysis until new methods of analysis shall have been developed? Whichever the case may be, what meteorology needs for its future advancement is a man like Newton, Laplace, Lagrange, Gauss, Poisson, or Fourier in astronomy and mathematics; Faraday, Maxwell, Helmholtz, Kelvin, or Stokes in physics; Bunsen, Mendeleff, or Van't Hoff in chemistry; or Charles Darwin in biology. Machines without a power to move on are useless, or the mere accumulations of observational data and mere possession of a new analysis are worthless without competent men to handle them. It appears that the brain of a genius is a mysterious workshop. Often, or rather almost always, this workshop is supplied with poor materials, and yet he builds up a wonderful thing out of them, which appears sometimes to be almost supernatural. A striking example of this is Clark Maxwell in the discovery of the electromagnetic theory. Before Hertz's famous experiments on electric waves or before the discovery of Röntgen rays, Maxwell used a few common physical hypotheses or data in building up his theory, but later, when his mathematical structure was complete, he cast aside the ladder, leaving so broad and comprehensive a system that Hertz once said that it is best defined as Maxwell's system of equations. For a long time Maxwell's theory was regarded as mere mathematical jugglery until Hertz eventually proved that it is physical reality. Another example of the kind is Fourier in constructing the mathematical theory of conduction of heat, the application of which principle to electricity made Ohm so famous. Fourier's theory had been discovered before any of the modern theories of heat was discovered. Or, did new experimental facts affect Fourier's theory?

The highest meteorological research will demand in the future the possession of the highest mathematical faculty, combined with experimental skill. It was a great misfortune to meteorology that a great genius like Maxwell did not attack our problems, or that Helmholtz died without completing his meteorological researches. Or if we had in our field Prof. Willard Gibbs, the most profound American mathematician, who has done so much for thermodynamics and the theory of gases, American meteorology might have been in a better condition. It is a great mistake that practical meteorologists have an aversion to the application of modern analysis in the study of meteorology. Experiments and mere reasoning can not go beyond certain steps. Instead, the history of science shows that mathematical analysis discovers the hidden chain which unites facts so widely distant from each other that ordinary reasoning could not even suspect their connection. At present we can not tell whether our present method of mathematical analysis is enough, or whether we shall need a new analysis for our purpose, but it is certain that the highest training in mathematical physics on the part of young meteorologists is not merely important but indespensable to the future advancement of meteorology. At the same time, meteorologists must invite eminent mathematicians and mathematical physicists to their field. Only thus may the observational data of the upper atmosphere or of the lower yield the best results, and meteorology may be able to enter the field of exact sciences.

INAUGURATION OF PRESIDENT DABNEY.

Dr. Charles W. Dabney, Assistant Secretary of Agriculture during President Cleveland's second administration, was installed as president of the University of Cincinnati on November 15–16, 1904, and, in the absence of Secretary Wilson and the Chief of the Weather Bureau, Prof. F. H. Bigelow had the pleasure of representing the Department on that occasion. Dr. Dabney has resigned his work as president of the University of Tennessee, and he has been welcomed most heartily into his new office at Cincinnati. The inaugural ceremonies were elaborate and enthusiastic, and a large number of educational institutions sent official delegates to take part in the exercises. The University of Cincinnati is a municipal institution, like the College of the City of New York; it has a beautiful site in the Burnet Woods Park, is well equipped with large buildings, and at present has about 1300 students in attendance. All those who were associated with Dr. Dabney during his residence in Washington will be pleased to know that he has fine prospects of performing a very useful work at Cincinnati.—*F. H. B.*

SEPTEMBER FLOODS IN THE SOUTHWEST.

The following reports of the recent floods in the Southwest were received too late for publication in the MONTHLY WEATHER REVIEW for September, 1904. They will be found very interesting as well as instructive. Those in New Mexico and southeastern Colorado were probably unprecedented, both as to volume of water and extent of territory affected, and their effect upon future engineering problems will doubtless be most pronounced. The Rio Grande floods were not so severe, yet the stages reached were quite high, and considerable damage was done to growing crops.

Among the lessons of these floods is the suggestion that the River and Flood Service of the Weather Bureau may be extended in these regions with at least a fair degree of utility. Two officials of the Bureau are now on the ground, examining the flooded districts with this end in view.—*H. C. Frankenfield, Professor.*

THE FLOODS IN SOUTHEASTERN COLORADO.

By F. H. BRANDENBURG, District Forecaster, Denver, Colo.

Flood stages occurred in a number of streams in southeastern Colorado on September 30 and October 1. The Purgatoire, or Picketwire, as it is known locally, on whose watershed the principal flood had its origin, rises in the Culebra